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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/028,456 02/24/98 OHASHI

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EXAMINER

THAI, L

ART UNIT

PAPER NUMBER

2811

DATE MAILED:

06/21/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/028,456

Applicant(s)
Ohashi

Examiner
Luan Thai

Group Art Unit
2811



☐ Responsive to communication(s) filed on _____.

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 24-47 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 24-47 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☒ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
☒ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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DETAILED ACTION

Continued Prosecution Application

1. The request filed on April 24, 2000 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09/028,456 is acceptable and a CPA has been established. An action on the CPA follows.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore,

“the electrical connection branch is connected to **more than one of the pads**” in claim 27 must be shown or the feature(s) canceled from the claim.

No new matter should be entered.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 27 and 36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 27, “the electrical connection branch is connected to more than one of the pads” is unclear as whether **one** connection branch is connected to more than one pads.

In claim 36, “a **plural plurality** of pads **for or** power source and grounding formed to be bigger than the signal pads” is not understood.

Correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims **25**, **27** (insofar as been understood), **32-33**, **37-39** and **46-47** are rejected under 35 U.S.C. 102(b) as being anticipated by Niki et al. (4,967,261) and Michii (5,252,853).

Regarding claims 25, 38-39 Niki et al. discloses (see figures 2-9, specifically see figures 2a, 3, 6a, and 7) a semiconductor device comprising: a semiconductor chip 1 having a plurality of pads 1a; a flexible substrate 3a having an opening formed therein, the flexible substrate having a common lead 32 having an electrical connection branch 32b-32d connected to one of the pads, wherein a portion of the connection branch positions inside the opening, and another portion of the connection branch is formed on the flexible substrate; the middle portion of the common lead continuously positioned inside the opening, and end portions of the common lead formed on the flexible substrate.

Regarding claims 27, Niki et al. further discloses the electrical connection branch being connected to more than one of the pads (see figure 2a).

Regarding claims 32-33 and 46-47, Niki et al. further discloses leads 40-45 (see figure 2a) protrude in the opening in a direction different from the a direction in which the common lead 3d protrudes in the opening. Niki et al. also discloses a portion of the electrical connection branch being positioned in the opening, an other portion of the electrical connection branch being formed on the flexible substrate 3a, and the electrical connection branch and the leads 40-45 protruding in the opening in the same direction (see figure 2a).

Michii (figures 2-4) also teaches a structure identical to the claim's structure in claims **25**, **27**, **32-33**, **38-39** and **46-47**.

In addition, Michii (referred to figure 2) also teaches the claimed structure in claim **37** by disclosing the power common lead 7 and the ground common lead 6.

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Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims **24 and 34-35** are rejected under 35 U.S.C. 103(a) as being unpatentable over Michii (5,252,853).

Regarding claims **24 and 34-35**, Michii discloses (see figure 2-3) a semiconductor device comprising a chip 1 having a plurality of signal pads 4, a plurality of power and grounding pads 2-3 disposed in a central area thereof and being arranged in lines (see figure 2); a flexible substrate 9 having an opening formed therein, the flexible substrate having a grounding common lead 6 connected to the ground pads, a power common lead 7 connected to the power pads, wherein middle portions of power and ground leads continuously positioned inside the opening and end portions of power and ground leads formed on the flexible substrate.

Although Michii does not explicitly state that the signal pads are formed a long peripheral edges of the chip, it could have been obvious to consider the signal pads 4, figure 2 of Michii reference as being formed long peripheral edges of the chip 1.

8. Claims **26, 28-29, 30, 36** (insofar as been understood), **and 40** are rejected under 35 U.S.C. 103(a) as being unpatentable over Niki et al. (4,967,261) and Michii (5,252,853).

Regarding claims 26 and 28-29, Niki et al. discloses all the features of the claimed invention as detailed above except for a portion of the electrical connection branch being narrower than each of the pads. However, forming a connection portion of a lead having a width narrower than the pad in order to make the process of bonding the connection portion of a lead to the pad easier is conventional in semiconductor art. Therefore, it would have been obvious to a

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person of ordinary skill in the art to apply such conventional connection portion into Niki et al.'s device for more convenient in bonding process. Moreover, it would have been an obvious matter of design choice to form the connection portion of a lead and the pad with different sizes since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. Note Atsushi (JP 08316270, figured 2, 4, and 5), Michii (5,252,853, figures 2-4), and Hayward et al. (4,801,999, figures 4A, 6A, 7, and 9-12) are cited to support the well known position.

Regarding claims 30 and 40, Niki et al. discloses all the features of the claimed invention as detailed above except for a middle portion of the common lead positioned inside the opening being wider than the other leads. However, forming a common lead (i.e., power lead or grounding lead) to be wider than other leads (i.e., signal leads) is conventional in the art in order to improve the current carrying capacity of the common lead. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply such conventional common lead into Niki's device in order to improve the current carrying capacity of the common lead. Moreover, it would have been an obvious matter of design choice to form a lead with different sizes or to be wider than the others since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art.

Regarding claim 36, Niki et al. discloses all the features of the claimed invention as detailed above except for one of the power source pad and the grounding pad of the semiconductor chip is larger than the signal pads. Although Niki et al. does not specifically disclose the ground pad, this feature is seen to be an inherent teaching of the device since a means of power and signal pads have been disclosed (Col. 7, lines 56+) and it is apparent that the grounding source must be present for the device to function as intended. In addition, making the power source pad or the grounding pad of the semiconductor chip to be larger than the signal pads could increase the current carrying capacity of the electrode and this would have been

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obvious to a person of ordinary skill in the art. Moreover, it would have been an obvious matter of design choice to form the power source pad or the grounding pad of the semiconductor chip to be larger than the signal pad since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. In addition, forming the power source pad or the grounding pad of the semiconductor chip to be larger than the signal pad is conventional in semiconductor art in order to improve the current carrying capacity of the pad. Note Atsushi (JP 08316270, figure 2) and Inoue (JP 01289276, figures 1 and 3) are cited to support the well known position.

The further citations of claims **26, 28-29, 30, 36, and 40** would have also been obvious over Michii reference (figure 2-4) for the same reasons as detailed above.

9. Claims **31 and 41-45**, are rejected under 35 U.S.C. 103(a) as being unpatentable over Niki et al. (4,967,261) and Michii (5,252,853) in view of Atsushi (JP 08316270, figures 2, 4, and 5).

Regarding claims 31 and 41-45, Niki et al. discloses all the features of the claimed invention as detailed above with the exception of a stress absorbing portion being formed in the common lead.

Atsushi while relates to a similar design teaches (see figures 2, 4, and 5) a lead having a bent section 5a formed inside the opening and adjacent to an edge of the opening in order to disperse stress due to heat and pressure in bonding (see abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply Atsushi's teachings into Niki et al.'s device by forming the bent portions in the common lead in order to disperse stress.

The further citations of claims 31 and 41-45 would have also been obvious over Michii reference (figures 2-4) in view of Atsushi for the same reasons as detailed above.

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10. Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2811 Fax Center number is (703) 308-7722 and 308-7724. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.

11. Any inquiry concerning this communication or any earlier communication from the Examiner should be directed to **Luan Thai** whose telephone number is (703) 308-1211. The Examiner is in the Office generally between the hours of 7:30 AM to 4:00 PM (Eastern Standard Time) Monday through Friday.

Any inquiry of a general nature or relating to the status of this application should be directed to the **Technology Center Receptionists** whose telephone number is (703) 308-0956.

06/16/2000

Luan Thai


Tom Thomas
Supervisory Patent Examiner
Technology Center 2800